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THE UNIVERSITY OF TENNESSEE
KNOXVILLE 37916
DEPARTMENT OF GEOGRAPHY
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ERTS Program Manager
NASA Headquarters
Washington, D.C.

Geographic Applications of ERTS-A Imagery
162-III Dr. John B. Rehder P.I. - UN 212

PROPOSAL?

At present (June 1972) no serious problems are impeding the progress of the investigation other than the anticipation of the launching of ERTS-A. The acquisition of low altitude imagery of test sites has been slower than expected because relatively cloud free conditions are uncommon to East Tennessee in June. This, however, poses no great problem in the pre-launch activities as we currently have 25 per cent of the test areas flown and anticipate completed coverage by July 4. Because of a late assignment of our U.T. account number (April 28) we have had difficulty in completing our expenditures for FY72. Therefore some funds, approximately one third of our FY72 funding of \$9,000 has not been expended. Part of this is attributed to delays in equipment shipments and in acquiring low altitude aircraft missions for the project.

Accomplishments during the reporting period (April 4 - June 27) primarily involve pre-launch preparations which have been completed. Two rooms for research offices and work rooms have been acquired and furnished with drafting tables and supplies, projection equipment and light tables,

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NASA SPON-NOTE

June 29, 1972
Page 2

photographic and office supplies, maps and map cases, storage cabinets, desks, lamps, and work tables. Two research assistants have been appointed: James R. O'Malley for image interpretation, photographic and field assistance, and Earl J. Tullos for image interpretation, cartographic and drafting assistance. Each are qualified in these efforts and are already doing a superb job in the pre-launch activities. Except for the acquisition of a direct reflecting mapping projector (Map-O-Graph) which has been ordered but not delivered, Phase I pre-launch equipping and readiness preparations have been made.

Low-altitude aircraft photographic missions (scale 1" = $\frac{1}{2}$ mile) are currently underway to produce control imagery for future comparative work with the ERTS imagery. Two test sites for this purpose have been selected and mapped. One is a 14 X 14 mile site located in a major strip mining and forest exploitation area on the Cumberland Plateau (Anderson, Campbell and Morgan counties) where landscape changes are expected to be pronounced. The other test area is a 11 X 21 mile site in Knox County which incorporates the city of Knoxville and its suburban growth area, and significant agricultural test areas on the University of Tennessee Agricultural campus and farms. As of June 27, we have approximately one half of the Knoxville Test Site flown with Color Infrared and Color Ektachrome 70 mm transparency imagery. The completion of these missions for phase I should be expected by July 4.

June 29, 1972
Page 3

Other activities include a literature search particularly in response to multi-stage sampling techniques and procedures. A second activity is involved in general detection and identification tests on simulated imagery supplied by NASA and USDA-ASCS (Asheville). Current examination of photos from the CARETS test area enlarged to 20 diameters from the original 1:460,000 scale photography reveal that basic landscape information such as cleared vs forested land, settlements, roads and transport routes are not lost by such enlargements. We are anxious to see if the ERTS imagery can do much the same.

A survey of up-to-date imagery for the Knoxville - East Tennessee study area is being conducted. Promising is the news that an RB-57 mission flew the northeastern portions of Tennessee in April 1972 for Dr. Robert Peplies of East Tennessee State University. Access and use of this imagery will enhance our control efforts for comparison with the ERTS imagery. We currently have a 14 frame strip of imagery on loan from Peplies which covers from the area of our Cumberland plateau test site to Chattanooga. This was flown in May 1971 and should prove useful for comparison.

We see a direct correlation of effort with Drs. Green and Bodenheimer of Electrical Engineering (Proposal #162-VIB) particularly with respect to the use of densitometric measurements and computer maps of the imagery. As I understand it, this proposal has been accepted by NASA and I welcome them aboard.

June 29, 1972
Page 4

I think that covers the majority of our activities since April and we are eagerly awaiting imagery from ERTS:

Sincerely,



Dr. John B. Rehder UN212

If there are any questions or comments please contact me at either of the following phone numbers:

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